



P2-100Y

**A Pentium® II or Deschutes
Slot1 Processor based AGP
mainboard (100/66MHz)**

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These specifications are subject to change without notice.

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June 15, 1998*

P2-100Y

The product name and revision number are both printed on the mainboard itself.

Handling Procedures

Static electricity can severely damage your equipment. Handle the P2-100Y and any other device in your system with care and avoid unnecessary contact with system components on the mainboard.

Always work on an antistatic surface to avoid possible damage to the motherboard from static discharge.

We assume no responsibility for any damage to the P2-100Y mainboard that results from failure to follow installation instructions or failure to observe safety precautions.



CAUTION



The P2-100Y mainboard is subject to damage by static electricity. Always observe the handling procedures.

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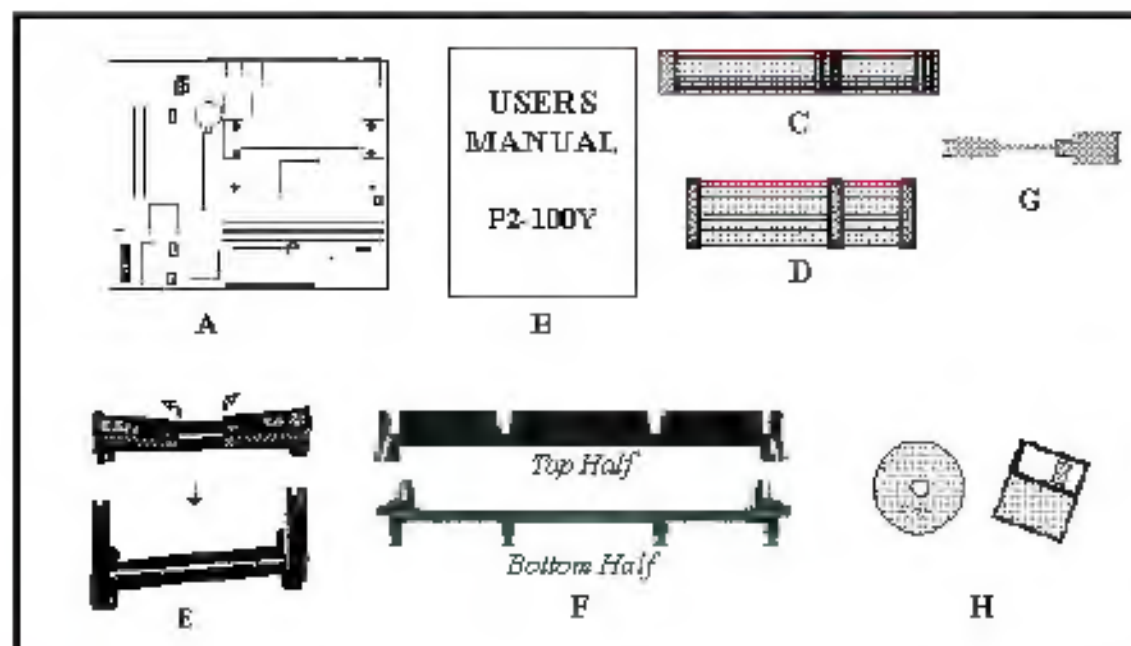
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Section 1

INTRODUCTION

Components Checklist

- ✓ A. (1) P2-100Y mainboard
- ✓ B. (1) P2-100Y user's manual
- ✓ C. (1) Floppy ribbon cable
- ✓ D. (1) Hard drive ribbon cables
- ✓ E. (1) Foldable Retention Module
- F. (1) Heatsink Support Unit (Optional)
- G. (1) PS/2 to AT keyboard connector adapter (optional)
- ✓ H. (1) Bus master drivers
(1) USDM



Overview

Pentium II or Deschutes Processor

The Pentium® II or Deschutes Processor (The Deschutes Processor as 300/100MHz, 350/100MHz, 400/100MHz and 450/100MHz speed with 512K-L2 cache Versions.) is the follow-on to the Pentium® Processor. The Pentium® II or Deschutes Processor, like the Pentium® Pro processor, implements a Dynamic Execution micro-architecture -- a unique combination of multiple branch prediction, data flow analysis, and speculative execution. This enables the Pentium® II Processor to deliver higher performance than the Pentium® processor, while maintaining binary compatibility with all previous Intel architecture processors.

A significant feature of the Pentium® II or Deschutes Processor, from a system perspective, is the built-in direct multiprocessing support. In order to achieve multiprocessing, and maintain the memory and I/O bandwidth to support it, new system designs are needed. For systems with dual processors, it is important to consider the additional power burdens and signal integrity issues of supporting multiple loads on a high speed bus. The Pentium® II or Deschutes Processor card supports both uni-processor and dual processor implementations.

The Pentium® II or Deschutes Processor utilizes Single Edge Contact (S.E.C.) (Figure 1) cartridge packaging technology. The S.E.C. cartridge allows the L2 cache to remain tightly coupled to the processor, while maintaining flexibility when implementing high performance processors into OEM systems. The second level cache is performance optimized and tested at the cartridge level. The S.E.C. cartridge utilizes surface mounted core components and a printed circuit board with an edge finger connection. The S.E.C. cartridge package introduced on the Pentium® II Processor will also be used in future Slot 1 processors.

The S.E.C. cartridge has the following features: a thermal plate, a cover and a PCB with an edge finger connection. The thermal plate allows standardized heatsink attachment or customized thermal solutions. The thermal plate enables a reusable heatsink to minimize fit issues for serviceability, upgradeability and replacement. The full enclosure also protects the surface mount components. The edge finger connection maintains socketability for system configuration. The edge finger connector is denoted as "Slot 1 connector" in this and other documentation.

The entire enclosed product is called the Pentium® II or Deschutes Processor. The

packaging technology and each of the physical elements of the product are referred to using accurate technical descriptions. This allows clear reference to the products as just a processor. This is the model used in past packaging technologies like PGA, TCP, PQFP, DIP, etc.

S.E.C. Cartridge Terminology

- **Pentium® II or Deschutes Processor**
The new enclosed card packaging technology is called a "Single Edge Contact cartridge." This is similar to previous names for packaging technology such as PGA or TCP.
- **Processor card**
The green PCB (with or without components on it)
- **Processor core**
The silicon on the PLGA package on the PCB
- **Cover**
The plastic cover on the opposite side from the thermal plate.
- **Slot 1**
The slot that the S.E.C. cartridge plugs into, just as the Pentium® Pro processor uses Socket 8.
- **Retention mechanism**
Formerly 'retention module' the dual posts, etc. that holds the cartridge in place.
- **Thermal plate**
The heatsink attachment plate.
- **Heat sink supports**
The support pieces that are mounted on the mainboard to provide added support for heatsinks.

The L2 cache (TagRAM, PDSRAM) components keep standard industry names.

The Pentium® II or Deschutes Processor is the first product to utilize the S.E.C. cartridge technology and Slot 1 connector. Unless otherwise noted, any references to "Pentium® II Processor,"

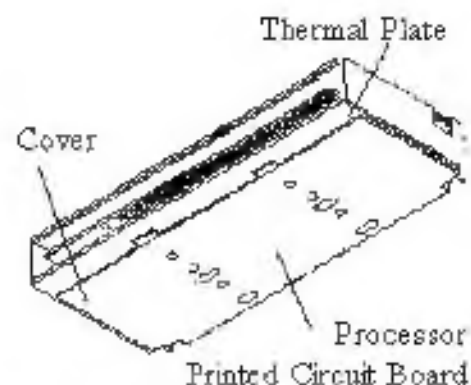


Figure 1: Pentium® II or Deschutes Processor CPU with S.E.C. Cartridge

"Pentium® II or Deschutes Processor/Slot 1 processor" or "Deschutes Processor" will apply to both the Pentium® II Processor desktop processors.

Accelerated Graphics Port (AGP or A.G.P.)

Typically, 3D graphics rendering requires a tremendous amount of memory, and demands ever increasing throughput speed as well. As 3D products for the personal computer become more and more popular, these demands will only increase. This will cause a rise in costs for both end users and manufacturers. Lowering these costs as well as improving performance is the primary motivation behind AGP. By providing a massive increase in the bandwidth available between the video card and the processor, it will assist in relieving some of these pressures for quite sometime.

Hardware Monitoring

Hardware monitoring allows you to monitor various aspects of your systems operations and status. These include features such as CPU temperature, voltage and fan RPM's.

EP-61BXC-A Form-Factor

The EPoX EP-61BXC-A is designed with MicroATX form factor - the new industry standard of chassis. The MicroATX form factor is essentially a Baby-AT baseboard rotated 90 degrees within the chassis enclosure and a new mounting configuration for the power supply. With these changes the processor is relocated away from the expansion slots, allowing them all to hold full length add-in cards. MicroATX defines a double height aperture to the rear of the chassis which can be used to host a wide range of onboard I/O. Only the size and position of this aperture is defined, allowing PC manufacturers to add new I/O features (e.g.; TV input, TV output, joystick, modem, LAN, etc.) to systems. This will help systems integrators differentiate their products in the marketplace, and better meet your needs.

- Smaller size promotes a smaller system size.
- I/O shield does not need to be retooled in an ATX 2.01 or later. Mainboard could be used in an ATX 2.01-compliant.
- A smaller power supply can be used. High integration on mainboard reduces the system costs.

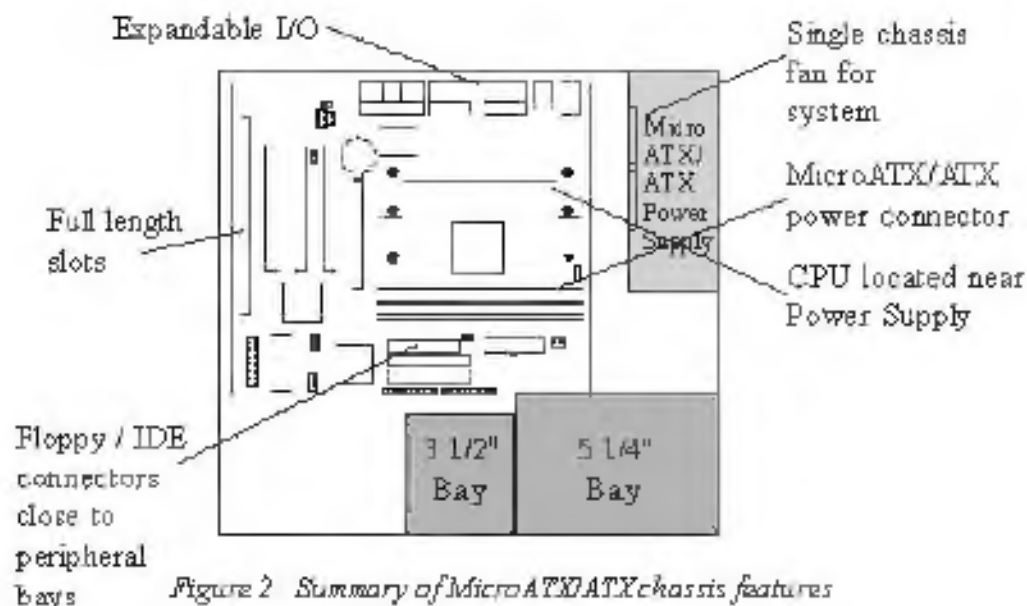


Figure 2 Summary of MicroATX/ATX chassis features

I/O Shield Connector

The EP-61BXC-A is equipped with an I/O back panel. Please use the appropriate I/O shield (figure 3).

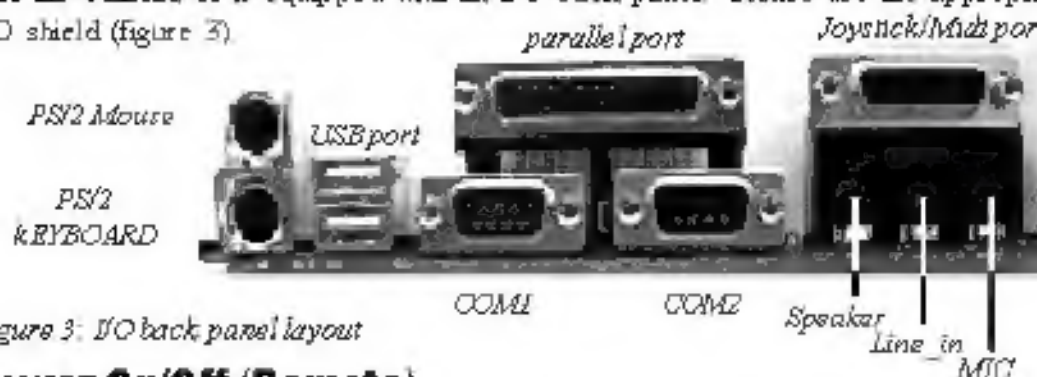


Figure 3: I/O back panel layout

Power-On/Off (Remote)

The EP-61BXC-A has a single 20-pin connector for MicroATX power supplies. For MicroATX/ATX power supplies that support the **Remote On/Off** feature, this should be connected to the systems front panel for system Power On/Off button. The systems power On/Off button should be a momentary button that is normally open.

The EP-61BXC-A has been designed with "Soft Off" functions. You can turn Off the system from one of two sources: The first is the front panel Power On/Off button, and the other is the "Soft Off" function (coming from the EP-61BXA-M's onboard circuit controller) that can be controlled by the operating system. Windows 95/98 will control this when the user clicks that they are ready to Shutdown the system.

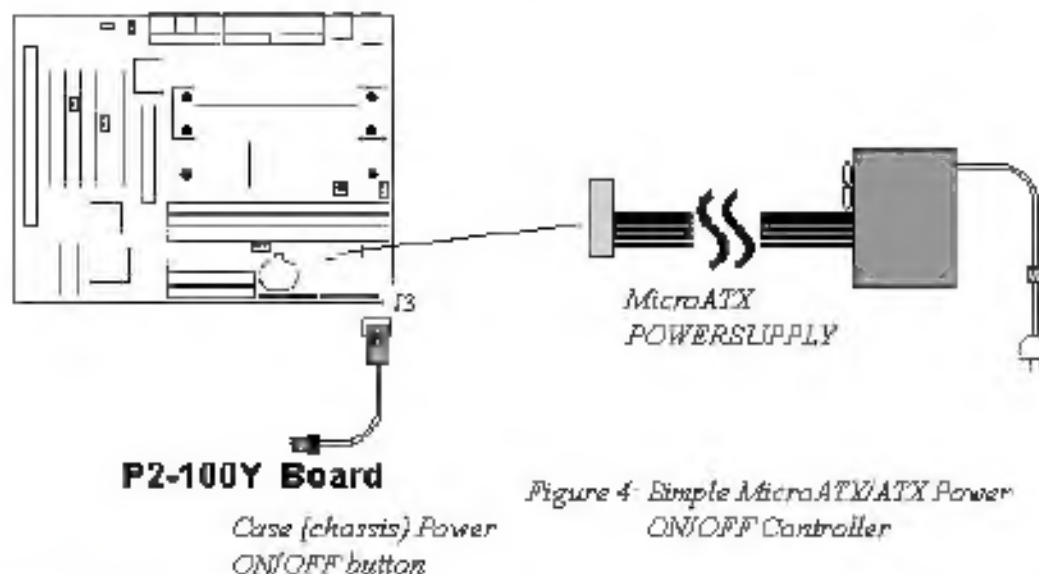


Figure 4: Simple MicroATX/ATX Power ON/OFF Controller

System Block Diagram

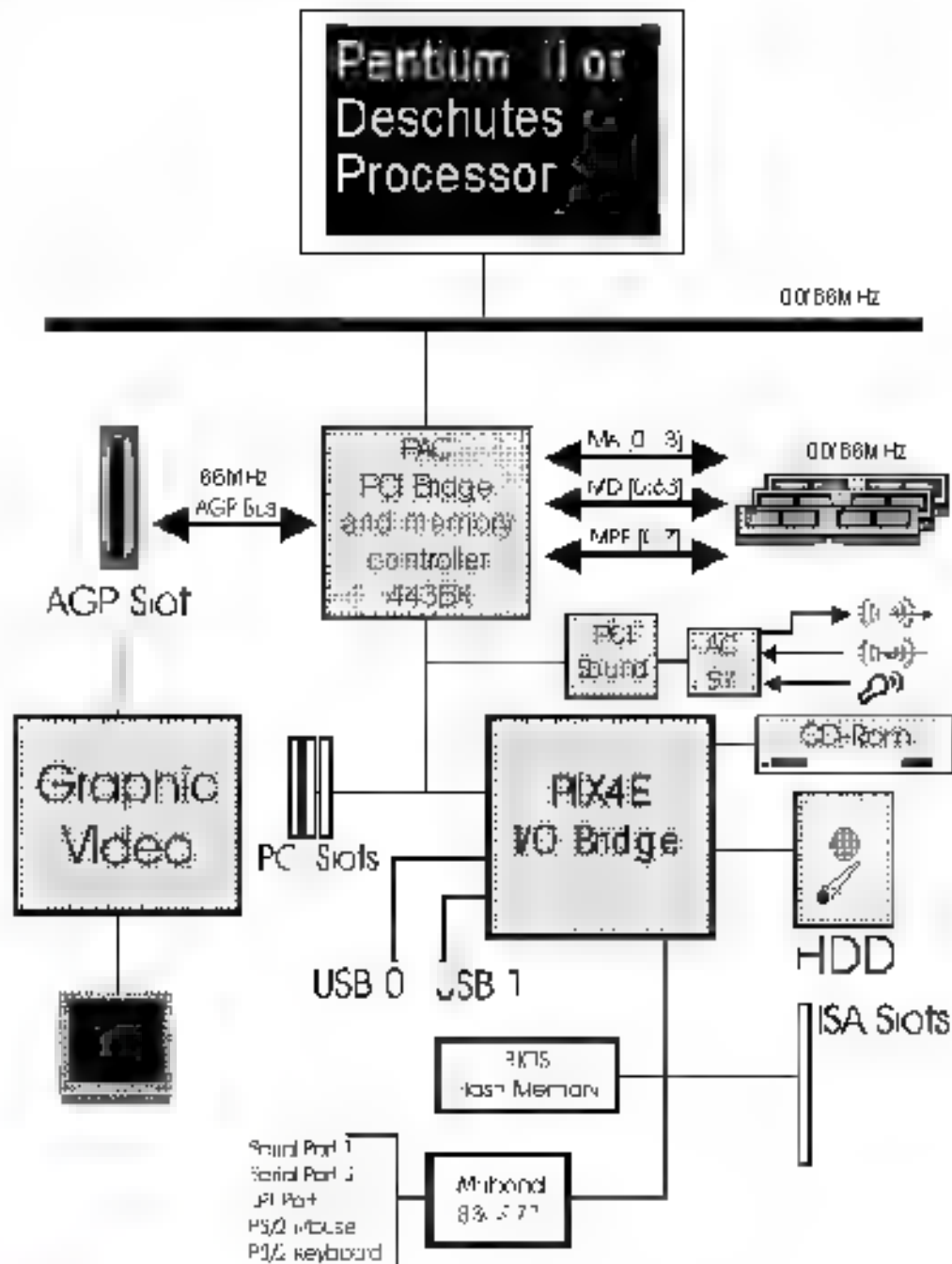


Figure 5 System Block Diagram

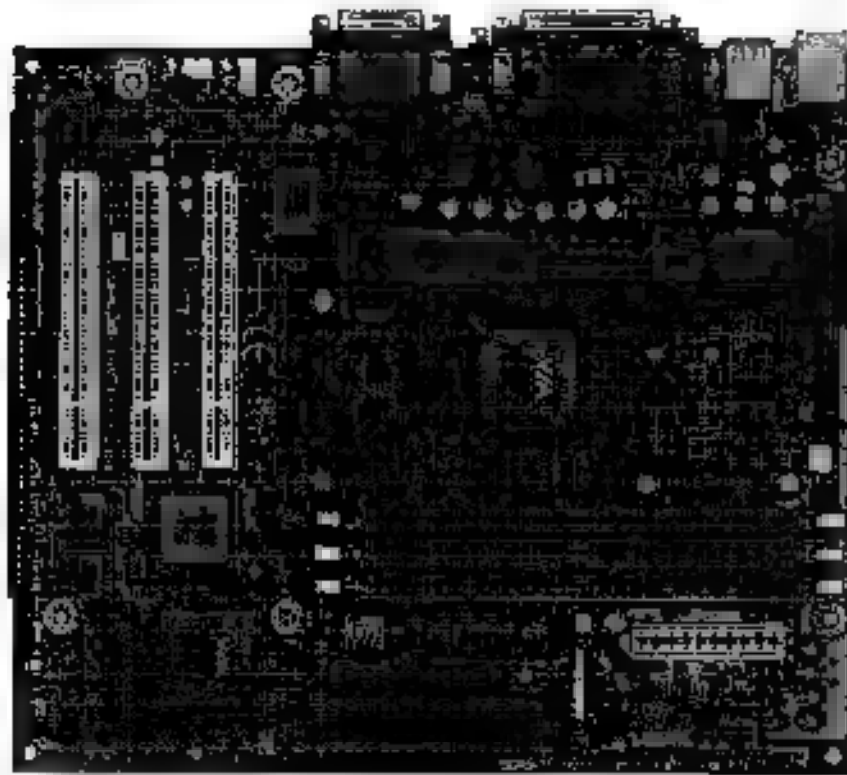
Section 2 FEATURES

P2-100Y Features:

- P2 100Y is based on the Pentium® II or Deschutes Processor operating at 233 ~ 333MHz, 66MHz or 300 ~ 550MHz, 100MHz, on Slot 1. The board is configured by an DIP Switch to match your CPU clock speed.
- Designed with VIA APOLLO PRO AGPset.
- Supports up to 384 Mega of DRAM, minimum of 16 MB on board. You can use 168-pin DIMM x 3. It will automatically detect Extended Data Output (EDO) DRAM at 66MHz only or Synchronous DRAM memory (SDRAM) at 66MHz or 100MHz (please see Section 3.2).
- P2 100Y will support Error Checking and Correcting (ECC) when using parity DRAM memory modules. This will detect multiple bit errors and correct 1-bit memory errors.
- Supports 1 x 16 bit ISA slots, 3 x 32 bit PCI slots, 1 x AGP slot and provides (2) independent high performance PCI IDE interfaces capable of supporting PIO Mode 3/4 and Ultra DMA 33 devices. The P2 100Y supports (2) PCI Bus Master slots and a jumper-less PCI INT# control scheme which reduces configuration confusion when plugging in PCI cards.
- Supports ATAPI (e.g. CD-ROM) devices on both Primary and Secondary IDE interfaces.
- Designed with Winbond W83877TE Multi I/O Floppy port, (1) parallel port (EPP/ECP and (2) serial ports, 16550 Fast UART). Note: Japanese "Floppy 3 mode" is also supported.
- Includes a PS/2 mouse connector.
- Allows use of a PS/2 keyboard.
- Features Award Plug & Play BIOS. With Flash Memory you can always upgrade to the current BIOS as they are released. (<http://www.epox.com> please visit our Technical Support section for the latest updates).

Section 3

INSTALLATION



P2-100Y Detailed Layout

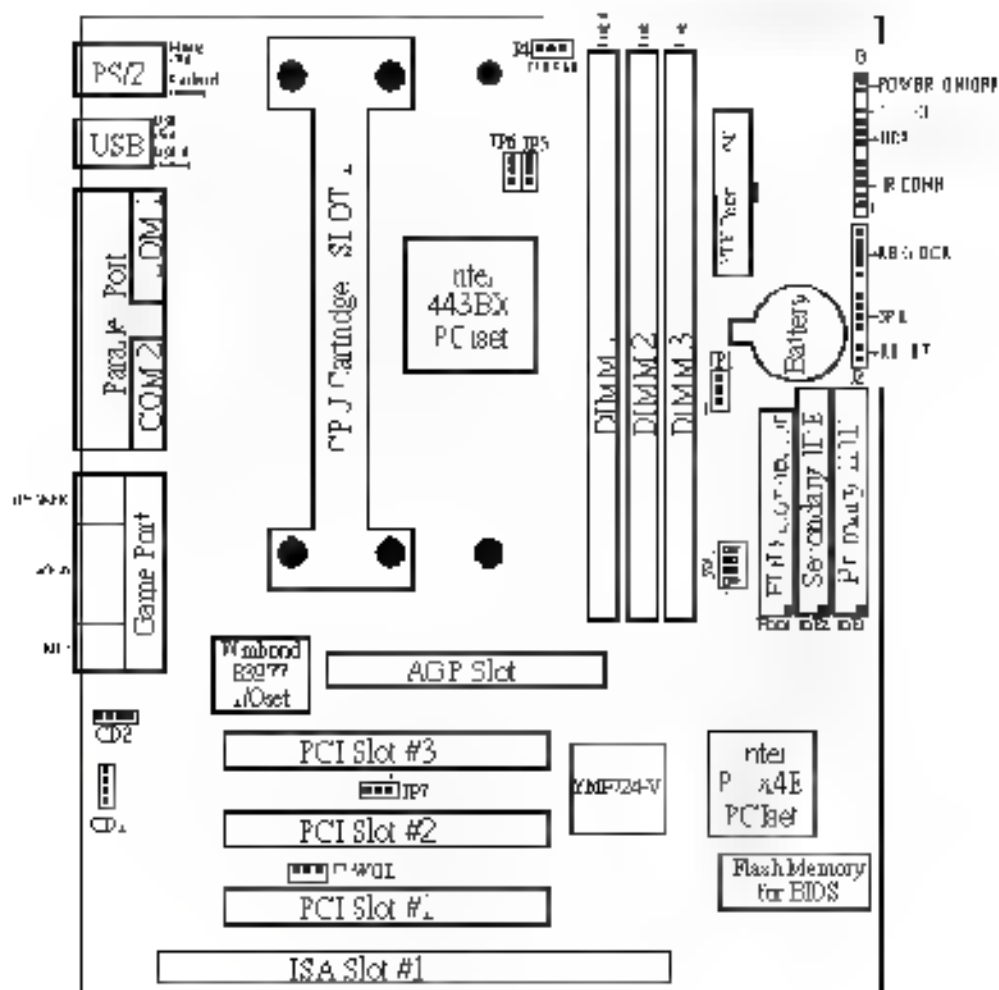


Figure 1

Easy Installation Procedure

Easy Installation Procedure

The following must be completed before powering on your new system

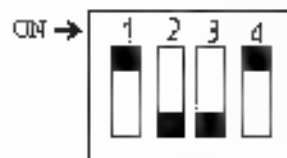
- 3 1. Configure DIP Switch to match your hardware
- 3 2. Install memory chips
- 3 3. Install Pentium II or Deschutes Processor
- 3 4. Device Connectors

Section 3-1 Configure DIP Switch

P2-100A designs all mainboards with a DIP Switch to make your instal fast and easy

The following will describe all of the DIP Switch that you are required to set before moving on to step 3 2

Note: The DIP Switch as depicted as shown (Figure 6) in their correct physical orientation



SW1				CPU	
1	2	3	4	60MHz	100MHz
ON		ON	ON	200	300
ON			ON	233	<30
	ON	ON	ON	266	400
	ON		ON	300	450
		ON	ON	333	500

JP1



CMOS Clear

JP1 = 1 2 Normal (Default)
= 2 3 Clear CMOS (momentarily)

JP5



CPU BUS CLOCK

JP5 = 1 2 AUTO (Default)
= 2 3 100MHz

JP7



Onboard PCI Sound

JP7 = 1 2 Enabled
= 2 3 Disabled

JP7



WOL (Wakeup On Lan) Connector

Reserved for NIC (Network Interface Card) to Wake the System

Section 3-2 System Memory Configuration

Memory Layout

The P2-100Y supports (3 168-pin DIMMs Dual In-line Memory Module). The DIMMs can be either EDO (Extended Data Out) or SDRAM (Synchronized DRAM). The DIMMs may be installed using just one chip.

- We recommend using SDRAM DIMM can not mixing with EDO DIMM modules together at 66MHz.
- The EDO DIMM only support pentium® II Processor at 66MHz not support Deschutes Processor at 100MHz.
- 256MB only Support registered synchronous DRAM Memory Modules. The Registered SDRAM DIMM do not mix with SDRAM DIMM modules together.
- We recommend when installed the 100MHz Deschutes Processor using DIMM SDRAM must be .25MHz 8ns bus speed. If used 100MHz 10ns SDRAM may be critical timing for the motherboard.
- About the "PC 100 SDRAM spec" information you may visit Intel's home page at:
<http://developer.intel.com/desig/pc100/mem/index.htm>
- DIMM SDRAM may be 83MHz .2ns 100MHz 10ns or 25MHz 8ns bus speed.

Figure 2 and Table 1 show several possible memory configurations using

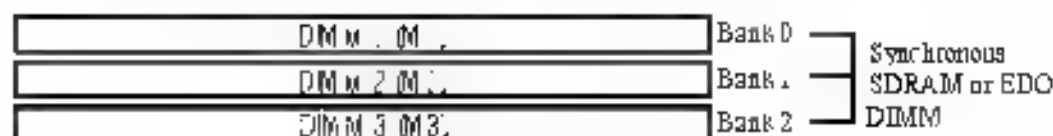
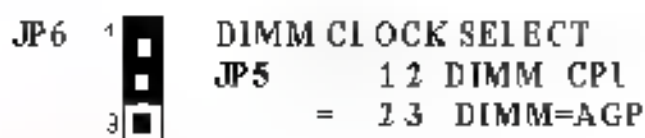


Figure 2



[illegible]

Tab. 8

*SDRAM only supports 8, 16, 32, 64, 128MB DIMM modules 256MB only supports Registered Synchronous DRAM Memory Modules

* EDO only supports Pentium® II Processor at 66MHz not supports Deschutes Processor at 100MHz

DHDM Module Installation

Figure 7 displays the notch marks and what they should look like on your DIMM memory module.

DIMMs have 68 pins and two notches that will match with the onboard DIMM socket. DIMM modules are installed by placing the chip firmly into the socket at a 90 degree angle and pressing straight down (figure 8) until it fits tightly into the DIMM socket (figure 9).

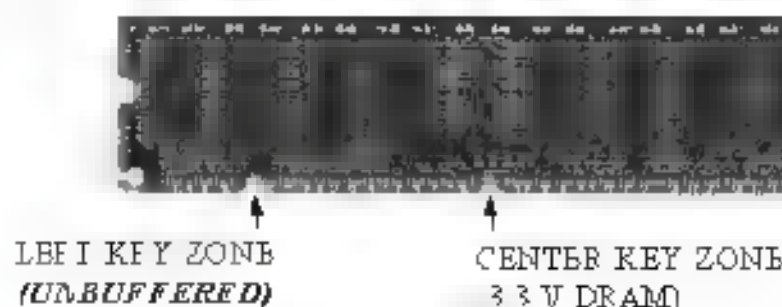
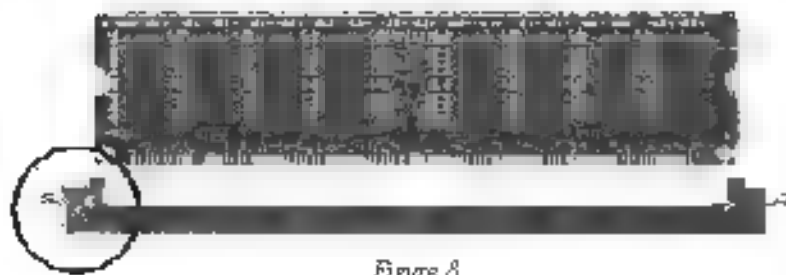
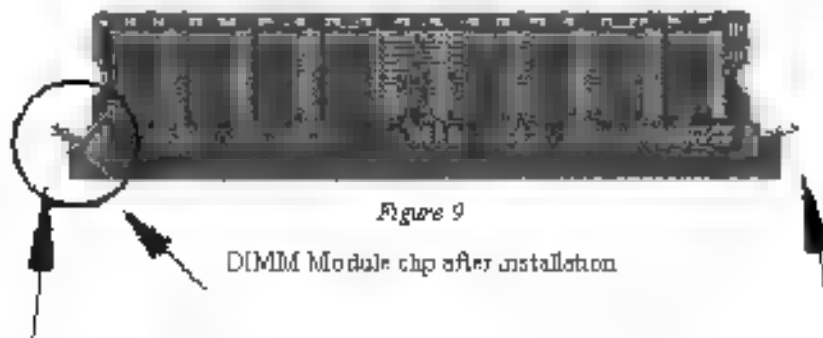


Figure 7

*Figure 8*

DIMM Module clip before installation

*Figure 9*

DIMM Module clip after installation

To remove the DIMM module simply press down both of the white clips on either side and the module will be released from the socket.

Section 3-3

Installing a Pentium II or Deschutes Processor

The P2-100Y uses the Single Edge Contact (SEC) slot for a Pentium II processor packaged in an SEC cartridge. The SEC slot is not compatible with other non-Pentium II processors.

Please have ready the following list of components so that we may install the processor onto the motherboard.

- 1 Heat sink support top/bottom piece
- 2 Pentium II processor heat sink
- 3 Intel Pentium II Processor

OK, now that you have all of your components ready, we can start.

- 1 First, please refer to figure 40 below, and follow the direction to lift up the fixed foldable pentium® II Retention Mechanism. This pre-installed device is designed for you to install Pentium® II CPU more easier and to avoid any damage on the board due to overtightening the four screws.
- 2 One thing must be kept in your mind that please make sure to lift upright the foldable parts of the Retention module to fit and install CPU properly.

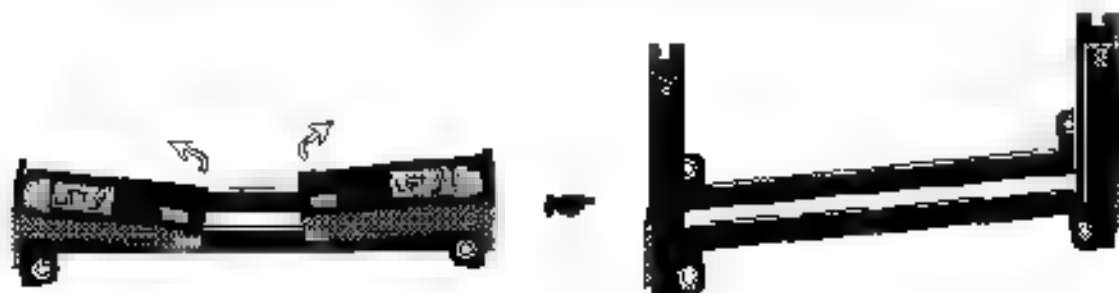


Figure 40

Now we are going to install the heatsink support base piece (figure 41) onto the motherboard. There is both a large and small hole (figure 42) so that the base will only fit in one direction. This piece needs to be pushed into the holes firmly until it is seated.

Now we are ready to install the SEC Cartridge, Pentium II Processor, into the Retention Module. The SEC Cartridge is mounted by sliding the SEC Cartridge into the Retention Module and letting it slide all the way down. Once it reaches the

bottom make sure you press firmly on SEC cartridge to firmly secure into the Slot 1 Socket

Now we need to secure the heatsink with the top half of the support (figure 13) Take the top piece of the support and slide it into the bottom fin (figure 13) on the heatsink and then push forward until it clips into the bottom base (figure 14) that's already there (figure 13)



Figure 11

Figure 12 shows the layout of Slot 1 and the holes for mounting the Heatsink base piece

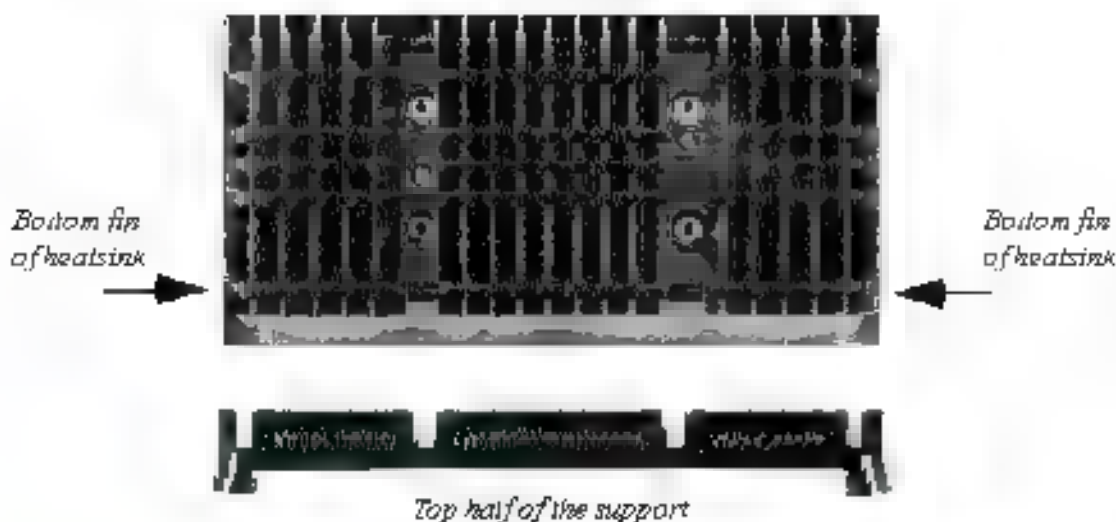


Motherboard
Layout

Large Hole for Heat Sink Base

Small Hole for Heat Sink Base

Figure 12



Top half of the support

Figure 13

Section 3-4

Device Connectors

Please install the mainboard into the chassis

Now that your mainboard is installed you are ready to connect all your connections (figure 4)

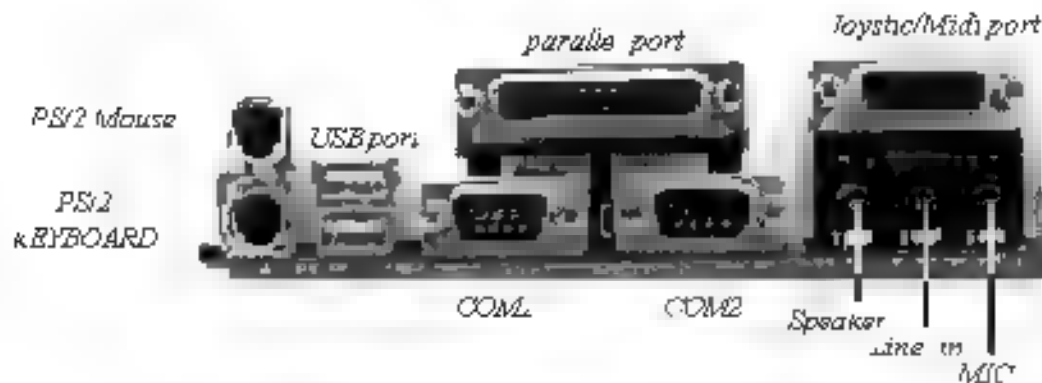


Figure 4

- J4** CPU Fan Power
 - A plug-in for the CPU Fan Power
- J2,J3** Chassis Panel Connector
 - Keylock Speaker Reset Sleep Turbo LBD and HDD LED
- J7** WOL (Wake on Lan) Connector
 - 20 pin power connector
- PW2** ATX Power Connector
 - 20 pin power connector
- IDE1** Primary IDE Connector
- IDE2** Secondary IDE Connector
- FDD1** Floppy Controller Connector
- CD1**
- CD2**

Section 4

AWARD BIOS SETUP

BIOS Instructions

Award's ROM BIOS provides a built-in Setup program which allows user to modify the basic system configuration and hardware parameters. The modified data will be stored in a battery backed CMOS so that data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM will stay unchanged unless there is a configuration change in the system, such as hard drive replacement or a device is added.

It is possible for the CMOS battery to fail, this will cause data loss in the CMOS only. If this does happen you will need to reconfigure your BIOS settings.

To enter the Setup Program

Power on the computer and press the key immediately this will bring you into the BIOS CMOS SETUP UTILITY.

ROM PC ISA BIOS (2A6LFPA9)
CMOS SETUP UTILITY
AWARD SOFTWARE INC

STANDARD CMOS SETUP	SUPERVISOR PASSWORD
BIOS FEATURES SETUP	USER PASSWORD
CHIPSET FEATURES SETUP	IDE HDD AUTO DETECTION
POWER MANAGEMENT SETUP	HDD LOW LEVEL FORMAT
PNP PC CONFIGURATION	SAVE & EXIT SETUP
INTEGRATED PERIPHERALS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
ESC QUIT	↑ ↓ → ← SELECT ITEM
F10 Save & Exit Setup	(Shift)F2 Change Color
Time, Date, Hard Disk Type	

Figure 1 CMOS Setup Utility

The menu displays all the major selection items. Select the item you need to reconfigure. The selection is made by moving the cursor (press any direction key) to the item and pressing the Enter key. An on-line help message is displayed at the bottom of the screen as the cursor is moved to various items which provides a better understanding of each function. When a selection is made, the menu of the selected item will appear so that the user can modify associated configuration parameters.

4-1 Standard CMOS Setup

Choose "Standard CMOS Setup" in the CMOS SETUP UTILITY Menu. Figure 2. The Standard CMOS Setup allows the user to configure system settings such as the current date and time, type of hard disk drive installed, floppy drive type and display type. Memory size is auto-detected by the BIOS and displayed for your reference. When a field is highlighted, use direction keys to move the cursor and the <Enter> key to select; the entries in the field can be changed by pressing the <PgDn> or the <PgUp> key.

ROM BIOS A BIOS (2A6LFFPA9)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm/dd/yy): Wed, Apr 7 1996									
Time (hh:mm:ss): 6:50:10									
HARD DISKS	TYPE	SIZE	CYLs	HEAD	PRECOMP	LANDZONE	SECTORS	MODE	
Primary Master	Auto	0	0	0	0	0	0	Auto	
Primary Slave	Auto	0	0	0	0	0	0	Auto	
Secondary Master	Auto	0	0	0	0	0	0	Auto	
Secondary Slave	Auto	0	0	0	0	0	0	Auto	
Drive A: 441k, 5.25 in.					Basic Memory: 640K				
Drive B: None					Extended Memory: 640+K				
Floppy 5 Mode Support: Disabled					Other Memory: 584K				
Video: EGA/VGA					Total Memory: 65536K				
Halt On: All But Keyboard									
<div style="display: flex; justify-content: space-between;"> ESC Quit ↑ ↓ → ← Select Item DEL/Del Modify </div> <div style="display: flex; justify-content: space-between;"> F1 Help Shift-F1 Change Color </div>									

Figure 2 Standard CMOS Setup

NOTE If the hard disk Primary Master/Slave and Secondary Master/Slave are set to Auto, then the hard disk size and model will be auto-detected.

NOTE: The "Halt On" field is used to determine when to halt the system by the BIOS if an error occurs.

NOTE Floppy 3 Mode support is a mode used to support a special 3.5" drive used in Japan. This is a 3.5" disk that stores only 1.2 MB, the default setting for this is disabled.

4-2 BIOS Features Setup

Selecting the "BIOS FEATURES SETUP" option in the CMOS SETUP UTILITY menu allows users to change system related parameters in the displayed menu. This menu shows all of the manufacturer's default values for the P2, 00Y.

Pressing the F1 key will display a help message for the selected item.

ROM PC/ISA BIOS(2A6LFPv9)				
BIOS FEATU RES SETUP				
AWARD SOFTWARE INC				
Virus Warning	Disabled	Video BIOS	Shadow	Enabled
CPU Internal Cache	Enabled	C8000-CBFFF	Shadow	Disabled
Dynamic Cache	Enabled	CC000-CEFFF	Shadow	Disabled
CPU L2 Cache ECC Checking	Enabled	D0000-D3FFF	Shadow	Disabled
Quick Power On Self Test	Enabled	D4000-D7FFF	Shadow	Disabled
Boot Sequence	A, C, EC, SI	D8000-DBFFF	Shadow	Disabled
Swap Floppy Drive	Disabled	DC000-DEFFF	Shadow	Disabled
Boot Up Floppy Seek	Enabled			
Boot Up NumLock Status	On			
Date A20 option	Fast			
Memory Parity/ECC Check	Disabled			
Typeahead Rate Setting	Disabled			
Typeahead Rate (Char./Sec)	6			
Type matrix Delay (Msec)	350			
Security Option	Setup			
PCI/VGA Palette Swap	Disabled			
OS Select For DRAM > 64MB	Win-DOSx			
Report NO FDD For Win 95	NO			
		Esc	Quit	← → → ← Select Item
		F1	Help	F10/Del → Auto del.
		F2	Old Values	(Shift) F2 Color
		F11	Load Setup Defaults	

Figure 2 BIOS Features Setup

Virus Warning: During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and an error message will appear.

You should then run an anti-virus program to locate the virus. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

The default value is Disabled

Enabled. Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector

Disabled. No warning message will appear when anything attempts to access the boot sector

Note Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you first disable the virus warning

CPU Internal Cache This controls the status of the processor's internal cache area

The default is Enabled

Enabled. This activates the processor's internal cache thereby increasing performance.

Disabled. This deactivates the processor's internal cache thereby lowering performance.

External (L2) Cache This controls the status of the external (L2) cache area

The default is Enabled

Enabled. This activates the motherboard's L2 cache thereby increasing performance

Disabled. This deactivates the motherboard's L2 cache thereby lowering performance

Quick Power On Self Test This category speeds up the Power On Self Test (POST)

The default is Enabled

Enabled. This setting will shorten or skip of the items checked during POST

Disabled. Normal POST

Boot Sequence This category determines which drive is searched first by the O/S Operating System

The default is A,C,SCSI

The following is your list of options

[A,C,SCSI] [C,A,SCSI] [C,CD-ROM,A] [CD-ROM,C,A]
 [D,A,CD-ROM] [E,A,CD-ROM] [F,A,CD-ROM] [SCSI,A,C]
 [SCSI,C,A] [C Only]

Swap Floppy Drive This will swap your physical drive letters A & B if you are using two floppy disks.

The default is Disabled.

***Enabled.** Floppy A & B will be swapped under the O/S.*

***Disabled.** Floppy A & B will be not swapped.*

Boot Up Floppy Seek During Power On Self Test (POST), BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. Only 360K type is 40 tracks while 720K, 1.2MB and 44MB are all 80 tracks.

The default is Enabled.

***Enabled** The BIOS will search the floppy disk drive to determine if it is 40 or 80 tracks.*

***Disabled.** The BIOS will not search for the type of floppy disk drive by track number.*

***NOTE:** BIOS can not tell the difference between 720K, 1.2MB and 44MB drive types as they are all 80 tracks.*

Boot Up NumLock Status This controls the state of the NumLock key when the system boots.

The default is On.

***On,** The keypad acts as a numeric keypad.*

***Off.** The keypad acts like the cursor keys.*

Gate A20 Option This refers to the way the system addresses memory above 1MB (extended memory).

The default is Fast.

***Normal.** The A20 signal is controlled by the keyboard controller or chipset hardware.*

***Fast.** The A20 signal is controlled by Port 92 or chipset specific method.*

Typematic Rate Setting This determines the keystrokes repeat rate.

The default is Disabled.

***Enabled** Allows typematic rate and typematic delay programming.*

***Disabled** The typematic rate and typematic delay will be controlled by the keyboard controller in your system.*

Typematic Rate (Chars/Sec) This is the number of characters that will be repeated by a keyboard press.

The default is 6.

6: 6 characters per second. 8: 8 characters per second.
 10: 10 characters per second. 12: 12 characters per second.
 15: 15 characters per second. 20: 20 characters per second.
 24: 24 characters per second. 30: 30 characters per second.

Typematic Delay (msec) This setting controls the time between the first and the second character displayed by typematic auto-repeat.

The default is 250.

250: 250 msec
 500: 500 msec
 750: 750 msec
 1000: 1000 msec

Security Option This category allows you to limit access to the System and Setup or just to Setup.

The default is Setup.

***System.** The system will not boot and the access to Setup will be denied if the correct password is not entered at the prompt.*

***Setup.** The system will boot, but the access to Setup will be denied if the correct password is not entered at the prompt.*

PCI/VGA Palette Snoop This field controls the ability of a primary PCI VGA controller to share a common palette (When a snoop write cycles with an ISA video card).

The default is Disabled.

***Enabled.** If an ISA card is connected to a PCI VGA card via the VESA connector and that ISA card connects to a VGA monitor then that ISA card uses the RAMDAC of the PCI card.*

***Disabled.** Disables the VGA card Palette Snoop function.*

OS Select For DRAM > 64MB Some operating systems require special handling. Use this option only if your system has greater than 64MB of memory.

The default is Non-OS2.

***OS2.** Select this if you are running the OS/2 operating system with greater than 64MB of RAM.*

***Non-OS2.** Select this for all other operating systems and configurations.*

Report No FDD For WIN95: This option allows BIOS to indicate whether WIN95 is with FDD or not. The Default value is NO.

NO: Report No FDD for WIN95

YES: Report FDD for WIN95

Video BIOS Shadow: This option allows video BIOS to be copied into RAM. Video Shadowing will increase the video performance of your system. The default is Enabled.

Enabled: Video shadow is enabled

Disabled: Video shadow is disabled

C8000 CBFFF Shadow

CC000 CFFFF Shadow

D0000 D3FFF Shadow

D4000 D7FFF Shadow

D8000 DBFFF Shadow

DC000 DFFFF Shadow

These categories determine whether ROMs from option cards will be copied into RAM. This will be in 16K byte or 32K byte units, and the size will depend on chipset of the option card.

Enabled: Optional shadow is enabled

Disabled: Optional shadow is disabled

4-3 Chipset Features Setup

Choose the "CHIPSET FEATURES SETUP" in the CMOS SETUP UTILITY menu to display following menu.

ROM PC100SA BIOS(JA59)PAB CHIPSET FEATURES SETUP AWARD SOFTWARE INC			
Bank 0/1 DRAM Timing	Fast	Auto Detect DIMM/PCI Clk	Enabled
Bank 2/3 DRAM Timing	Fast	Spread Spectrum	Disabled
Bank 4/5 DRAM Timing	Fast	System CPU Warning Temp	50 °C/122 °F
		Current CPU Temp	32 °C/89 °F
SDRAM Cycle length	3	Current System Temp	0 °C/32 °F
SDRAM Bank interleaving	2 Bank	Current CPU Fan Speed	0 RPM
DRAM Page-Mode	Enabled	Vcore	2.83 V
DRAM Read Latency Delay	20 nSec	VH	± 48 V
Memory Hole At 1.0Mb Addr	Disabled	3.3V	3.32 V
Read Around write	Disabled	+5V	4.94 V
Concurrent PCI/Host	Enabled	+12V	± 2.6 V
Video RAM Cacheable	Enabled	± 3V	± 98 V
AGP Aperture Size	64M	5V	5.08 V
Esc Quit ← → Select Item			
F1 Help PU/PD/+/- Modify			
F5 Old Values Shift)F2 Color			
F7 Load Setup Defaults			

Figure 4 Chipset Features Setup

SDRAM Cycle length This setting defines the CAS timing parameter of the SDRAM in terms of clocks.

The default is 3.

- 2 Provides faster memory performance
- 3 Provides better memory compatibility

Video RAM Cacheable This option allows the CPU to cache read/writes of the video RAM.

The default is Enabled.

- Enabled** This option allows for faster video access
- Disabled** Reduced video performance

Memory Hole at 15M-16M You can reserve this memory area for the use of ISA adaptor ROMs

The default is Disabled

Enabled This field enables the main memory (15-16MB) to remap to ISA BUS

Disabled Normal Setting

NOTE If this feature is enabled you will not be able to cache this memory segment

AGP Aperture Size The amount of system memory that the AGP card is allowed to share

The default is 64

4 4MB of systems memory accessible by the AGP card

8 8MB of systems memory accessible by the AGP card

16 16MB of systems memory accessible by the AGP card

32 32MB of systems memory accessible by the AGP card

64 64MB of systems memory accessible by the AGP card

128 128MB of systems memory accessible by the AGP card

256 256MB of systems memory accessible by the AGP card

Auto Detect DIMM/PCI Clk Allows you to stop DIMM/PCI Clock drive when the DIMM size or PCI Slot are not plug. This item may help reduce EMI

The default is Enabled

Enabled Provides unusea DIMM/PCI to stop.

Disabled Provides the clock generator always driving

Spread Spectrum Modulated Allows you to active the Spread Spectrum Modulation function for reduce EMI (Note: When Enabled the item that performance will be impacted)

The default is Disabled

Enabled Provides the Spread Spectrum function from clock generator

Disabled NO Spread Spectrum function

CPU Warning Temperature This is the temperature that the computer will respond to an overheating CPU

The default is Disabled

Enabled Temperature is monitored on the CPU

Disabled This feature is turned off

Current CPU Temperature This is the current temperature of the CPU

Current Power FAN Speed The current power fan speed in RPMs

Current CPU FAN Speed The current CPU fan speed in RPMs

Current Chassis FAN Speed The current chassis fan speed in RPMs

CPU(V) The voltage level of the CPU

+1.5V The voltage level of the CPU's GTL+ Bus

+3.3V +5V, +12V The voltage level of the switch power supply

4-4 Power Management Setup

Choose the "POWER MANAGEMENT SETUP" in the CMOS SETUP UTILITY to display the following screen. This menu allows the user to modify the power management parameters and IRQ signals. In general, these parameters should not be changed unless it is absolutely necessary.

ROM CMOS BIOS 2A59JPAB
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management	User Define	Primary(NTS)	ON
PM Control by APM	Yes	IRQ3 (COM2)	Primary
Video off Option	Suspend > Off	IRQ4 (COM1)	Primary
Video off Method	WH SYNC+Blank	IRQ5 (LPT 2)	Primary
MODEM use IRQ	9	IRQ6 Floppy Disk	Disabled
Soft. off by PW/RETN	Delay 4 Sec	IRQ7 (LPT)	Primary
RMT users		IRQ8 (RTC Alarm)	Disabled
HDD Power Down	Disable	IRQ9 IRQ2 Redir	Primary
Doze Mode	Hour	IRQ10 (Reserved)	Primary
Suspend Mode	Hour	IRQ11 (Reserved)	Primary
RM Events		IRQ12 (PS/2 Mouse)	Primary
VGA	OFF	IRQ13 (Coprocessor)	Primary
LPT & COM	LPT/COM	IRQ14 (Hard Disk)	Primary
HDD & FDD	ON	IRQ15 (Reserved)	Disabled
DMA/master	OFF		
Modem Ring Buffer	Disabled		
RTC Alarm Resume	Disabled		

Esc	Quit	↑ ↓ → ←	Select Item
F1	Help	PU/PD+/-	Modify
F5	Old Values	(Shift)F2	Color
F7	Load Setup Defaults		

Figure 5 Power Management Setup

You can only change the content of Doze Mode Standby Mode and Suspend Mode when the Power Management is set to User Define.

Power Management Use this to select your Power Management selection.
The default is User define

Disabled. The system operates in NORMAL conditions (Non-GREEN) and the Power Management function is disabled.

Max saving Maximum power savings. Inactivity period is 1 minute in each mode

Min saving Minimum power savings. Inactivity period is 1 hour in each mode

User define Allows user to define PM Timers parameters to control power saving mode

PM controlled APM This option shows whether or not you want the Power Management to be controlled by the Advanced Power Management (APM).
The default is Yes

Yes. APM controls your PM

No. APM does not control your PM

Video Off Method This option allows you to select how the video will be disabled by the power management.
The default is V/H Sync + Blank

V/H Sync + Blank System turns off vertical and horizontal synchronization ports and writes blanks to the video buffer

DPMS. Select this option if your monitor supports the Display Power Management Signaling (DPMS), standard of the Video Electronics Standards Association (VESA). Use the software supplied for your video subsystem to select video power management values

Blank Screen. System only writes blanks to the video buffer

Video Off option Tells you what time frame that the video will be disabled under current power management settings.
The default is Standby

Standby. Video powers off after time shown in standby mode setting

Doze Video powers off after time shown in doze mode setting

Suspend Video powers off after time shown in suspend mode setting

Not A. Video power off not controlled by power management

MODEM Use IRQ Name the interrupt request (IRQ) line assigned to the modem, if any, on your system. Activity of the selected IRQ always awakens the system

Default is IRQ 3

<i>None</i> No IRQ is used	3 IRQ 3
4 IRQ 4	5 IRQ 5
7 IRQ 7	9 IRQ 9
10 IRQ 10	11 IRQ 11

The EP 61APC M supports HDD Power Down Doze and Standby, power saving functions when using the Intel Pentium II Processor

The default is Disabled

Doze Mode The "Doze" mode timer starts to count when no "PM events" have occurred

Suspend Mode This function works only when the Pentium II Processor is installed. The timer starts to count when "System Standby" mode timer is timed out and no "PM Events" are occurring. Valid range is from 1 minute up to 1 hour

HDD Power Down HDD Standby timer can be set from 1 to 15 minute(s)

VGA Active Monitor Use this option if your monitor has advanced power saving features

The default is Enabled

***Enabled** Your monitor's power features will be included in power management.*

***Disabled** Your monitor's power features will not be included in power management.*

Soft-Off by PWR-BTTN Use this to select your soft off function

The default is Delay 4 sec

***Instant Off** Turns off instantly*

***Delay 4 Second** Turns off after a 4 second delay. If momentary press of button, the system will go into Suspend Mode. Press again to take system out of Suspend Mode*

Resume by Alarm This option allows you to have the system turn on at a preset time each day or on a certain day. This option is only available when Power Loss Recovery is Enabled

The default is Enabled

***Enabled** The system will turn on at the preset time*

***Disabled** The system will not turn on until you turn it on.*

Date (of month) Alarm: This shows you set the date that the system will turn on. The default is 0.

0: Setting this to 0 will turn the system on everyday at the preset time.

1-31: Represents the day of the month that you need the system to turn on.

Time (hh:mm:ss) Alarm: This sets the time that you need the system to turn on. The default is 08:00:00.

PNP/PCI Configuration

The PNP/PCI configuration program is for the user to modify the PCI/ISA IRQ signals when various PCI/ISA cards are inserted in the PCI or ISA slots.

WARNING: Conflicting IRQ's may cause the system to not find certain devices.

ROM: PCI/ISA BIOS (2A6L FPA9)

PNP/PCI CONFIGURATION

AWARD SOFTWARE, INC.

PNP OS Installed	No	CPU to PCI Write Buffer	Enabled
Resources Controlled By	Manual	PCI Dynamic Bursting	Enabled
Reset Configuration Data	Disabled	PCI Master/DOS Write	Enabled
ACPI APIC Device Mode	Enabled	PCI Delay Transaction	Enabled
IRQ-3 assigned to	Legacy ISA	PCI Master Read Prefetch	Enabled
IRQ-4 assigned to	Legacy ISA	PCI#2 Access #0 Retry	Disabled
IRQ-5 assigned to	PCI/ISA PnP	AGP Master: 1 WS Write	Enabled
IRQ-7 assigned to	Legacy ISA	AGP Master: 1 WS Read	Disabled
IRQ-9 assigned to	PCI/ISA PnP		
IRQ-10 assigned to	PCI/ISA PnP	PCI IRQ Activated By	Legacy
IRQ-11 assigned to	PCI/ISA PnP	Assign IRQ For USB	Enabled
IRQ-12 assigned to	PCI/ISA PnP	Assign IRQ For VGA	Enabled
IRQ-14 assigned to	Legacy ISA		
IRQ-15 assigned to	Legacy ISA		
DMA-0 assigned to	PCI/ISA PnP		
DMA-1 assigned to	PCI/ISA PnP		
DMA-3 assigned to	PCI/ISA PnP		
DMA-5 assigned to	PCI/ISA PnP		
DMA-6 assigned to	PCI/ISA PnP		
DMA-7 assigned to	PCI/ISA PnP		

Esc	Quit	↑ ↓ → ←	Select Item
F1	Help	PU/PD/+/=	Modify
F5	Old Values	Shift)F2	Color
F7	Load Setup Defaults		

Figure 6: PCI Configuration Setup

PNP OS Installed: Do you have a PNP OS installed on your system? The default is No.

Yes: Select if you are using a PNP OS.

No: Select if your OS does not support PNP.

Resources Controlled By Who controlled the system PNP/PCI resources
The default is Manual.

Manual PNP Card's resources will be controlled manually. You can set which IRQ-X and DMA-X are assigned to PCI/ISA PNP or Legacy ISA Cards

Auto If your ISA card and PCI card are all PNP cards BIOS will assign the interrupt resource automatically.

Reset Configuration Data This setting allows you to clear ESCD data
The default is Disabled

Disabled Normal Setting

Enabled If you have plugged in some Legacy cards to the system and they were recorded into ESCD (Extended System Configuration Data), you can set this field to Enabled in order to clear ESCD.

PCI IDE IRQ Map Id This item allows the user to configure the system for the type of IDE hard disk controller in use. By default, the BIOS assumes that the hard drive controller is an ISA device rather than a PCI controller. If you are using a PCI controller then you will need to change this to specify which PCI slot has the controller and which PCI interrupt A, B, C, or D is associated with the connected IDE devices

Assign IRQ For USB This item allows BIOS to assign whether IRQ is with USB or not. If you have not connect the USB device. Can release the IRQ for other device

The default is Enabled

Enabled, Provides IRQ for USB device

Disabled Release IRQ for other device

4-8 Load Setup Defaults

The "LOAD SETUP DEFAULTS" function loads the system default data directly from ROM and initializes the associated hardware properly. This function will be necessary only when the system CMOS data is corrupted.

4-7 Integrated Peripherals

ROM BIOS(AWARD BIOS)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC

OnChip IDE First Channel	Enabled	Onboard Parallel Port	378/IRQ7
OnChip IDE Second Channel	Enabled	Onboard Parallel Mode	ECP EPP
IDE Prefetch Mode	Enabled	ECP Mode Use DMA	1
IDE HDD Block Mode	Enabled	Parallel Port EPP Type	EPP 9
IDE Primary Master PIO	Auto	OnChip USB	Disabled
IDE Primary Slave PIO	Auto		
IDE Secondary Master PIO	Auto		
IDE Secondary Slave PIO	Auto		
IDE Primary Master DMA	Auto		
IDE Primary Slave DMA	Auto		
IDE Secondary Master DMA	Auto		
IDE Secondary Slave DMA	Auto		
Init AGP Display First	Disabled		
Onboard FDD Controller	Enabled	Esc Quit	← → Select item
Onboard Serial Port 1	Auto	F1 Help	PGUP/PgDn Modify
Onboard Serial Port 2	Auto	F5 Old Values	(Shift)F2 Color
UART2 Mode	Standard	F7 Load Setup Defaults	

Figure 8 Integrated Peripherals

Note If you do not use the Onboard IDE connector, then you will need to set Onboard Primary PCI IDE Disabled and Onboard Secondary PCI IDE Disabled

Note The Onboard PCI IDE cable should be equal to or less than 18 inches (45 cm.).

IDE HDD Block Mode IDE Block Mode allows the controller to access blocks of sectors rather than a single sector at a time

The default is Enabled

Enabled Enables IDE HDD Block Mode Provides higher HDD transfer rates.

Disabled Disables IDE HDD Block Mode

Onchip IDE First Channel The default value is Enabled

Enabled Enables Onboard IDE primary port.

Disabled Disables Onboard IDE primary port.

Onchip IDE Second Channel

The default is Enabled

Enabled Enables Onboard IDE secondary port

Disabled Disables Onboard IDE secondary port

IDE Primary Master PIO

The default is Auto

Auto BIOS will automatically detect the Onboard Primary Master PCI IDE HDD Accessing mode

Mode 0-4 Manually set the IDE Programmed interrupt mode

IDE Primary Slave PIO

The default is Auto

Auto BIOS will automatically detect the Onboard Primary Slave PCI IDE HDD Accessing mode

Mode 0-4 Manually set the IDE Programmed interrupt mode

IDE Secondary Master PIO

The default is Auto

Auto BIOS will automatically detect the Onboard Secondary Master PCI IDE HDD Accessing mode

Mode 0-4 Manually set the IDE Programmed interrupt mode

IDE Secondary Slave PIO

The default is Auto

Auto BIOS will automatically detect the Onboard Secondary Slave PCI IDE HDD Accessing mode

Mode 0-4 Manually set the IDE Programmed interrupt mode

IDE Primary Master UDMA This allows you to select the mode of operation for the hard drive

The default is Auto

Auto The computer will select the optimal setting

Disabled The hard drive will run in normal mode

IDE Primary Slave UDMA This allows you to select the mode of operation for the hard drive

The default is Auto

***Auto.** The computer will select the optimal setting*
***Disabled** The hard drive will run in normal mode*

IDE Secondary Master UDMA This allows you to select the mode of operation for the hard drive
 The default is Auto

***Auto.** The computer will select the optimal setting*
***Disabled** The hard drive will run in normal mode*

IDE Secondary Slave UDMA This allows you to select the mode of operation for the hard drive
 The default is Auto

***Auto.** The computer will select the optimal setting*
***Disabled** The hard drive will run in normal mode*

USB Keyboard Support This controls the activation status of an optional USB keyboard that may be attached.
 The default is disabled.

***Enabled** Enable USB keyboard support*
***Disabled** Disable USB keyboard support.*

Onboard FDC Controller This controls the state of the onboard floppy controller.
 The default value is Enabled

***Enabled** Enable the Onboard Winbond Chip's floppy drive interface controller*
***Disabled** Disable the Onboard Winbond Chip's floppy drive interface controller*

Onboard Serial Port 1 This field allows the user to configure the 1st serial port.
 The default is Auto

***AUTO** Enable Onboard Serial port , and address is Auto adjusted*
***COM1** Enable Onboard Serial port , and address is 3F8H/IRQ4*
***COM2** Enable Onboard Serial port , and address is 2F8H/IRQ3*
***COM3** Enable Onboard Serial port , and address is 3E8H/IRQ4*
***COM4** Enable Onboard Serial port , and address is 2E8H/IRQ3*

Disabled Disable Onboard SMC CHIP's Serial port 1

Onboard Serial Port 2 This field allows the user to configure the 2nd serial port
The default is Auto

AUTO Enable Onboard Serial port 2 and address is Auto adjusted

COM1 Enable Onboard Serial port 2 and address is 3F8H/IRQ4

COM2 Enable Onboard Serial port 2 and address is 2F8H/IRQ3

COM3 Enable Onboard Serial port 2 and address is 3E8H/IRQ4

COM4 Enable Onboard Serial port 2 and address is 2E8H/IRQ3

Disabled Disable Onboard SMC CHIP's Serial port 2

UART Mode Select The mode of the IR Controller
The default is Normal

IrDA Support a Serial Infrared Interface IrDA

ASKIR Support a Sharp Serial Infrared Interface formats

Normal The IRRX and IRTX pins of IR function in normal condition

Onboard Parallel port This field allows the user to configure the LPT port
The default is 378H/IRQ7

378H Enable Onboard LPT port and address is 378H and IRQ7

278H Enable Onboard LPT port and address is 278H and IRQ5

3BCH Enable Onboard LPT port and address is 3BCH and IRQ7

Disabled Disable Onboard Winbond Chip's LPT port

Parallel Port Mode This field allows the user to select the parallel port mode
The default is ECP+EPP

Normal Standard mode IBM PC/AT Compatible bi-directional parallel port

EPP Enhanced Parallel Port mode

ECP Extended Capabilities Port mode

EPP+ECP ECP Mode & EPP Mode

ECP Mode USE DMA This field allows the user to select DMA1 or DMA3 for the ECP mode
The default is DMA3

DMA1 This field selects the routing of DMA1 for the ECP mode

DMA3 This field selects the routing of DMA3 for the ECP mode

Power On Method There are "Button Only", "Hot Key" and "Any key" can be chosen by this field that allows users to select one of these various functions as Power On Method for the requirement

The default value in this selection is "Hot Key" (Ctrl. F1)

Hot Key. User can press "Control Key" (Ctrl), and "Function Key" (from F1 to F12), individually to power on the system

The interval between "Ctrl" key and function Key (F1-F12), must be short

Anykey. Press anykey to power on the system

Button Only This power on method is controlled by J. (power on), Use Power On Button to power on the system.

Password. User can Power On the System by password the password can be entered from 1 to 5 characters. The maximum of password is 5 characters

If user forget /lost the password please go into BIOS setting to change the Power On Method. or key in another words as password instead of original one

4-3 Change Supervisor or User Password

To change the password, choose the "SUPERVISOR PASSWORD or USER PASSWORD" option from the CMOS SETUP UTILITY menu and press [Enter].

NOTE Either "Setup" or "System" must be selected in the "Security Option" of the BIOS FEATURES SETUP menu.

1. If CMOS is corrupted or the option was not used, a default password stored in the ROM will be used. The screen will display the following message

Enter Password

Press the [Enter] key to continue after the proper password is given

2. If the CMOS is corrupted or the option was used earlier and the user wishes to change the default password, the SETUP UTILITY will display a message and ask for a confirmation

Confirm Password

- 3 After pressing the [Enter] key (ROM password if the option was not used) or current password / user defined password, the user can change the password and store new one in CMOS RAM. A maximum of 8 characters can be entered.

4-9 IDE HDD Auto Detection

The "IDE HDD auto detection" utility is a very useful tool especially when you do not know which kind of hard disk type you are using. You can use this utility to detect the correct disk type installed in the system automatically. But now you can set HARD DISK TYPE to Auto in the STANDARD CMOS SETUP. You don't need the "IDE HDD AUTO DETECTION" utility. The BIOS will Auto detect the hard disk size and mode on display during POST.

ROM BIOS & BIOS (2A6LBP)9
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

HARD DISKS	TYPE	SIZE	CYLS	HEADS	PRECOMP	LANDZONE	SECTORS	MODE
Primary Master								
Select Secondary Slave Option (H-Slap) 0								
OPTIONS	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE	
2CY	4310	524	255	0	4847	63	LBA	
	4310	14848	9	65535	4847	63	NORMAL	
3	4310	928	144	65535	4847	63	LARGE	
Note: Some Oses like SCO UNIX must use NORMAL for initialization								
ESC Skip								

Figure 8 IDE HDD Auto Detection

NOTE HDD Modes

The Award BIOS supports 3 HDD modes: NORMAL, LBA & LARGE. NORMAL mode:

Generic access mode in which neither the BIOS nor the IDE controller will make any transformations during accessing.

The maximum number of cylinders, head & sectors for NORMAL mode are:

$$\begin{aligned}
 &1024 \times 6 \times 63 \\
 &\text{no Cylinder} \quad 1024 \\
 &\times \text{no Head} \quad 16 \\
 &\times \text{no Sector} \quad 63 \\
 &\underline{\times \text{no. per sector}} \quad 512 \\
 &528 \text{ Megabytes}
 \end{aligned}$$

If user set his HDD to NORMAL mode, the maximum accessible HDD size will be 528 Megabytes even though its physical size may be greater than that.

LBA (Logical Block Addressing) mode A new HDD accessing method to overcome the 528 Megabyte bottleneck. The number of cylinders, heads & sectors shown in setup may not be the number physically contained in the HDD. During HDD accessing, the IDE controller will transform the logical address described by sector, head & cylinder into its own physical address inside the HDD. The maximum HDD size supported by LBA mode is 8.4 GigaBytes which is obtained by the following formula:

$$\begin{aligned}
 &\text{no Cylinder} \quad 1024 \\
 &\times \text{no Head} \quad 255 \\
 &\times \text{no Sector} \quad 63 \\
 &\underline{\times \text{bytes per sector}} \quad 512 \\
 &8.4 \text{ GigaBytes}
 \end{aligned}$$

LARGE mode Extended HDD access mode supported by Award Software.

Some IDE HDDs contain more than 1024 cylinder without LBA support. In some cases, user do not want LBA. The Award BIOS provides another alternative to support these kinds of LARGE mode.

<u>CYLS</u>	<u>HEADS</u>	<u>SECTOR</u>	<u>MODE</u>
1120	16	59	NORMAL
560	32	59	LARGE

BIOS tracks DOS (or other OS) that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside.

INT 12h in order to access the right HDD address

Maximum HDD size

no Cylinder	(1024
x no Head	32)
x no Sector	63)
x bytes per sector	512
	1 GigaByte

Note To support LBA or LARGE mode of HDDs there must be some software involved. All the software is located in the Award HDD Service Routine (INT 13h). It may fail to access a HDD with LBA (LARGE) mode selected if you are running under an Operating System which replaces the whole INT 13h.

UNIX operating systems do not support either LBA or LARGE and must utilize the Standard mode. UNIX can support drives larger than 528MB.

4-10 HDD Low Level Format

Interleave Select the interleave number of the hard disk drive you wish to perform a low level format on. You may select from 1 to 8. Check the documentation that came with the drive for the correct interleave number, or select 0 for automatic detection.

Auto scan bad track This allows the ability to scan first then format by each track.

Start Press <Y> to start low level format.

Appendix A:

A-1 MEMORY MAP

Address Range	Size	Description
00000-7FFFF]	512K	Conventional memory
80000-9FBFF]	27K	Extended Conventional memory
9FC00-9FFFF]	K	Extended BIOS data area if PS/2 mouse is installed
A0000-C7FFF]	60K	Available for H.DOS memory
C8000-DFFFF]	96K	Available for Hi DOS memory and adapter ROMs
E0000-EEFFF]	60K	Available for UMB
EF000-EFFFF]	4K	Video service routine for Monochrome & CGA adaptor
F0000-F7FFF]	32K	BIOS CMOS setup utility
F8000-FCFFF]	20K	BIOS runtime service routine (2)
FD000-FDFFF]	4K	Plug and Play ESCD data area
FE000-FFFFFF]	8K	BIOS runtime service routine

A-2 I/O MAP

000-0F]	DMA controller (Master)
020-021]	INTERRUPT CONTROLLER (Master)
022-023]	CHIPSET control registers I/O ports
040-05F]	TIMER control registers
060-06F]	KEYBOARD interface controller (8042)
070-07F]	RTC ports & CMOS I/O ports
080-09F]	DMA register
0A0-0BF]	INTERRUPT controller (Slave)
0C0-0DF]	DMA controller (Slave)
0F0-0FF]	MATHCOPROCESSOR
1F0-1F8]	HARDDISK controller
278-27F]	PARALLEL port 2
2B0-2DF]	GRAPHICS adapter controller
2F8-2FF]	SERIAL port 2
360-36F]	NETWORK ports
378-37F]	PARALLEL port
3B0-3BF]	MONOCHROME & PARALLEL port adapter
3C0-3CF]	EGA adapter

3D0-3DF	CICA adapter
3F0-3F7	FLOPPYDISK controller
3F8-3FF	SERIAL port

A-3 TIMER & DMA CHANNEL MAP

TIMER MAP

TIMER Channel 0	System timer interrupt
TIMER Channel 1	DRAM REFRESH request
TIMER Channel 2	SPEAKER tone generator

DMA CHANNELS

DMA Channel 0	Available
DMA Channel 1	Onboard ECP Option,
DMA Channel 2	FLOPPYDISK (SMC CHIP)
DMA Channel 3	Onboard ECP default
DMA Channel 4	Cascade for DMA controller
DMA Channel 5	Available
DMA Channel 6	Available
DMA Channel 7	Available

A-4 INTERRUPT MAP

NMI

Parity check error

RQ (H/W)

0	System TIMER interrupt from TIMER 0
1	KEYBOARD output buffer full
2	Cascade for IRQ 8-15
3	SERIAL port 1
4	SERIAL port 2
5	PARALLEL port 2
6	FLOPPYDISK (SMC CHIP)
7	PARALLEL port
8	RTC clock
9	Available
10	Available
11	Available
12	PS/2 Mouse
13	MATH coprocessor

- 14 Onboard HARD DISK (IDE) channel
- 15 Onboard HARD DISK (IDE) channel

A-5 RTC & CMOS RAM MAP

RTC & CMOS

00	Seconds
01	Second alarm
02	Minutes
03	Minutes alarm
04	Hours
05	Hours alarm
06	Day of week
07	Day of month
08	Month
09	Year
0A	Status register A
0B	Status register B
0C	Status register C
0D	Status register D
0E	Diagnostic status byte
0F	Shutdown byte
10	FLOPPY DISK drive type byte
11	Reserve
12	HARD DISK type byte
13	Reserve
14	Equipment type
15	Base memory low byte
16	Base memory high byte
17	Extension memory low byte
18	Extension memory high byte
19-1D	
2E-2F	
30	Reserved for extension memory low byte
31	Reserved for extension memory high byte
32	DATE CENTURY byte
33	INFORMATION FLAG
34-3F	Reserve
40-7F	Reserved for CHIPSET SETTING DATA

Appendix B:**B-1 POST CODES**

ISA POST codes are typically output to I/O port address 80h

POST (hex)	DESCRIPTION
0-02	Reserved
03	Turn off OEM specific cache shadow
04	1. Initialize EISA registers (EISA BIOS only) 2. Initialize all the standard devices with default values Standard devices includes: DMA controller (8237) Programmable Interrupt Controller (8259) Programmable Interval Timer (8254), RTC chip
05	Reserved
06	1. Keyboard Controller Self Test 2. Enable Keyboard interface
07	Reserved
08	Verifies CMOS's basic R/W functionality
09	Auto-detection of onboard DRAM & Cache
0A	Copy the BIOS from ROM into E0000-FFFFF shadow RAM so that POST will go faster
0B	Test the first 256K DRAM
0C	OEM specific cache initialization (if needed)
0D	1. Initialize the first 32 interrupt vectors with corresponding Interrupt handlers. Initialize INT numbers from 33-20 with Dummy (Spurious Interrupt Handler) 2. Issue CPU ID instruction to identify CPU type 3. Early Power Management initialization (OEM specific)
0E	1. Verify the RTC time is valid or not 2. Detect bad battery 3. Read CMOS data into BIOS stack area 4. PnP initializations including: (PnP BIOS only) Assign CSN to PnP ISA card Create resource map from ESCD 5. Assign IO & Memory for PC devices (PCI BIOS only)

0C	Initialization of the BIOS Data Area (40:00 - 40:FF)
0D	1. Program some of the Chipset's value according to Setup (Early Setup Value Program) 2. Measure CPU speed for display & decide the system clock speed 3. Video initialization including Monochrome, CGA, EGA/VGA. If no display device found, the speaker will beep.
0E	1. Test video RAM (If Monochrome display device found) 2. Show messages including <ul style="list-style-type: none">- Award Logo, Copyright string, BIOS Data code & Part No.+ OEM specific sign on messages+ Energy Star Logo, (Green BIOS ONLY)- CPU brand, type & speed.- Test system BIOS checksum (Non-Compress Version only)
0F	DMA channel 0 test.
10	DMA channel 1 test
11	DMA page registers test
12-13	Reserved.
14	Test 8254 Timer 0 Counter 2
15	Test 8259 interrupt mask bits for channel 1.
16	Test 8259 interrupt mask bits for channel 2
17	Reserved.
19	Test 8259 functionality.
1A-1D	Reserved.
1E	If EISA NVM checksum is good, execute EISA initialization. (EISA BIOS only)
1F-29	Reserved.
30	Detect Base Memory & Extended Memory Size
31	1. Test Base Memory from 256K to 640K 2. Test Extended Memory from 1M to the top of memory.
32	1. Display the Award Plug & Play BIOS Extension message. (PoP BIOS only) 2. Program all onboard super I/O chips (if any) including COM ports, LPT ports, FDD port according to setup value
33-3B	Reserved.
3C	Set flag to allow users to enter CMOS Setup Utility.
3D	1. Initialize Key board 2. Install PS2 mouse.

3E	Try to turn on Level 2 cache Note: Some chipset may need to turn on the L2 cache in this stage. But usually, the cache is turn on later in POST 61h
3F-40	Reserved
BF	1. Program the rest of the Chipset's value according to Setup (Later Setup Value Program)
41	2. If auto-configuration is enabled, program the chipset with pre-defined Values.
42	Initialize floppy disk drive controller.
43	Initialize Hard drive controller
45	If it is a PnP BIOS, initialize serial & parallel ports.
44	Reserved
45	Initialize math coprocessor.
46-4D	Reserved.
4E	If there is any error detected (such as video, kb.), show all error messages on the screen & wait for user to press <F1> key
4F	1. If password is needed, ask for password. 2. Clear the Energy Star Logo. (Green BIOS only)
50	Write all CMOS values currently in the BIOS stack area back into the CMOS
51	Reserved
52	1. Initialize all ISA ROMs. 2. Later PCI initializations (PCI BIOS only) - assign IRQ to PCI devices. - initialize all PCI ROMs. 3. PnP Initializations (PnP BIOS only) - assign IO, Memory, IRQ & DMA to PnP ISA devices. - initialize all PnP ISA ROMs. 4. Program shadows RAM according to Setup settings 5. Program parity according to Setup setting 6. Power Management Initialization. - Enable/Disable global PM - APM interface initialization.
53	1. If it is NOT a PnP BIOS, initialize serial & parallel ports. 2. Initialize time value in BIOS data area by translate the RTC time value into a timer tick value
60	Setup Virus Protection (Boot Sector Protection) functionality according to Setup setting

61	<ol style="list-style-type: none"> 1. Try to turn on Level 2 cache. <p>Note: If L2 cache is already turned on in POST 3D, this part will be skipped.</p> <ol style="list-style-type: none"> 2. Set the boot up speed according to Setup setting. 3. Last chance for Chipset initialization. 4. Last chance for Power Management initialization (Green BIOS only). 5. Show the system configuration table.
62	<ol style="list-style-type: none"> 1. Setup daylight saving according to Setup value. 2. Program the NUM Lock, typematic rate & typematic speed according to Setup setting.
63	<ol style="list-style-type: none"> 1. If there is any changes in the hardware configuration, update the ESCD information (PnP BIOS only). 2. Clear memory that have been used. 3. Boot system via INT 19H.
FF	System Booting. This means that the BIOS already pass the control right to the operating system.

B-2 Unexpected Errors:

POST (hex)	DESCRIPTION
B0	If interrupt occurs in protected mode.
B1	Unclaimed NMI occurs 0

Appendix C

NOTE:

The "LOAD SETUP DEFAULTS" function loads the system default data directly from ROM and initializes the associated hardware properly. This function will be necessary when you accept this mainboard, or the system CMOS data is corrupted.

ROM PCI/ISA BIOS (2A69KPA9)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	SUPERVISOR PASSWORD
BIOS FEATURES SETUP	USER PASSWORD
CHIPSET FEATURES SETUP	IDE HDD AUTO DETECTION
POWER MANAGEMENT SETUP	HDD LOW LEVEL FORMAT
PNP/PCI CONFIGURATION	LOAD SETUP DEFAULTS
INTEGRATED PERIPHERALS	LOAD SETUP DEFAULTS (Y/N)? Y
LOAD SETUP DEFAULTS	LOAD SETUP DEFAULTS
ESC: QUIT	↑ ↓ → SELECT ITEM
F10: Save & Exit Setup	(Shift) F2 Change Color
Load Setup Defaults Except Standard CMOS SETUP	

LOAD SETUP DEFAULTS